FOSTER

REFRIGERATOR

RBC20-60
Blast Chiller

SERVICE MANUAL

Contents	Page
Introduction	**1 to 2**
Model Details	**2**
Controller Technical Detail	**2**
Parts List	**2**
Operating Instructions	**3 to 6**
Electrical Connections	**7**
Service Information	**7 to 19**
Diagnostics	**8**
Function Test	**8**
Passcode	**8**
Profiles	**9**
Parameter Access	**9**
Parameters	**9 to 11**
Parameter Definitions	**11 to 18**
Alarms and Warnings	**18**
Foot Print Test Operation	**19**
Probes	**19**
Technical Data	**20 to 22**
Wiring Diagrams	**23 to**

Introduction.

Cook Chill Operation.
Blast chilling is a process to reduce the temperature of cooked food by swiftly arresting the cooking process, locking in its colour, flavour, texture and nutritional value. Department of health guidelines state that to safely blast chill food the temperature must be reduced from +70°c to +3°c within 90 minutes.

Pre Chill
Pre chilling ensures the correct cabinet temperature in the unit before chilling commences therefore improving the chilling performance.

Soft Chilling.
Soft chilling is the process of rapid but gentle chilling of food.
This cycle brings down the food temperature to +3°c in no more than 90 minutes without the air or food temperature going below 0°c.
This prevents large ice crystals forming therefore maintaining the texture, consistency and appearance of food such as vegetables, rice, pasta, custard and fruit with no dehydration or cell damage.

Hard Chilling.
Hard chilling is the process of general purpose chilling.
This cycle brings down the food temperature to +3°c in no more than 90 minutes and is ideal for chilling meat pies, lasagne, pasta and individually portioned meals. The air temperature for this process goes down to -15°c for the first 70% of the cycle, to extract the maximum amount of heat from the product quickly. The air temperature then increases to +3°c for the final 30% of the time to reduce surface damage and ensure quality.

Hard Chill Max.
Hard chill max brings down the food temperature to +3°c in no more than 90 minutes and is used for chilling high density or high fat content food such as meat joints, stews or packaged products.
The air temperature during the cycle is allowed to go down to -20°c.
After either a pre-designated time has elapsed or product temperature has been achieved, the air temperature is allowed to rise to the 'hold' value with the temperature being maintained at this level indefinitely.

Surface Protection.
Removing the heat energy from food product as rapidly as possible by the combination of powerful refrigeration and evaporator fans moving large volumes of cooled air can cause damage to the food product. The food product could have a form of 'Frost Burn' caused by the fast moving air feeling cooler than the actual air temperature 'Wind Chill Effect'. This may lead to product discoloration, dehydration, localised freezing and spoilage of the food product.
Surface protection overcomes this by reducing the evaporation operation, and hence the air speed at pre-determined stages in the cycle to ensure that this does not happen. This is a discreet function and happens automatically without any intervention from the operator. To enable the surface protection; and determine at what stage it would be activated values are set in the service operating parameters.

Longer Term Storage – 'Hold' Mode (Conservation)
Upon the completion of the blast chilling cycle the controller will automatically enter the 'Hold' mode. This will either be because the selection set time has elapsed or the product core temperature has been achieved. When the hold period commences an alarm will sound for a period denoted in the service operating parameters.

The controller will determine the temperature to be maintained during the hold phase based on the chilling cycle that has been completed. If a soft or hard chill has taken place the controller will maintain an air temperature of 2°c.

The hold mode is principally intended as a temporary storage facility offering the operator flexibility until the product can be unloaded into a longer term storage units at the correct storage temperature. On occasion this hold period may become extended to operate overnight or to provide emergency refrigeration backup. In such instances defrosting would automatically occur as necessary.

Model Details.

The RBC 20-60 is capable of blast chilling 60kg of product from +70°c to +3°c in 90 minutes with entry temperature up to 90°c

The cabinet is compatible with the Rational 20 rack GN 1/1 201 trolley.

Refrigerant used is R404A.

The RBC20-60 has two separate refrigeration systems comprising, two condensing units, a twin circuit condenser and a twin circuit evaporator. (See pages 20 and 21 for assembly details and page 22 for schematic dual circuit refrigeration layout).

The RBC20-60R has the same refrigeration systems but the condensing units are remotely sited.

Refrigerant control is by expansion valve to control the correct amount of refrigerant required to meet the demand of the evaporator. (See page 21 for assembly detail).

The parameter 'Capacity Enable' is set to 'ON' to allow for both condensing units to be running during the chill cycle therefore maximising the heat extraction from the product. During the 'HOLD' mode with the 'Capacity Enable' set to 'ON' one compressor will control the temperature throughout unless the temperature exceeds the capacity control limit.

A 1½" BSP drain outlet is fitted in to the base of the cabinet for connection to external drain.

The cabinet is delivered with the legs secured to the base of the cabinet.

Controller Technical Detail

The FCC controller is a three-piece unit made up of the Front Display and Dial Shaft Encoder, Mother Board plus Evaporator, Food and Air temperature probes. The front display PCB and the CPU/ Switching PCB unit are interconnected by a ribbon cable. The membrane attached to the front provides an IP rating of IP54 providing a scratch free wipe clean finish.

The control dial is the method by which the controller is accessed for all requirements. It has three planes of movement, clockwise, anticlockwise and inwards.

The control dial allows the operator/ engineer to move forward and backwards through various menu selections shown on the display, and enter a desired programme. The control system will then respond appropriately either commencing the operating cycle or allowing further configuration.

Part numbers

Item	Description	Part Number
Controller Mother Board		00-555395
Controller Shaft Encoder		00-555396
Controller LCD Display		00-555394
Air Probe P1	NTC type. 2.5m	00-555397
Evaporator Probe P2	NTC type. 2.5m	00-555397
Food Probe	5M Length	00-555663
Compressor x 2	TAJ4519ZH T 400/50	00-555885
Condenser Coil	BC6013/122	01-257300-01
Condenser Fan Assembly	S4E300-BP26-30	00-555886
Sight Glass	3/8"	15483015
Drier		00-555388
Solenoid Valve	EVR6 32F5219+0	15451215
Liquid Receiver		00-555579
LP Switch	2.5 Bar 0.5 Bar Diff	00-555387
HP Switch	28 Bar – 3 Bar Diff	00-555386
High Pressure Thermostat	KP5 Auto Re-set (set at 18 BAR with a 3 BAR diff.)	15452109
Evaporator Coil	BC6013/121	01-256400-01
Expansion Valve	Valve Body TES2-NL68Z34300/68	15450386
Orifice	NO 02 68-2092/68-2072	15451104
Expansion Valve	Solder Adaptor 68-2	15450910
Evaporator Fan Motor	W4E420-CP02-66788-4-7320	00-555375
hinge	Edgemount	00-555880
Door Gasket	1406x546MM	01-256387-01
Door Switch	Circular (Reed Type)	00-555829
Door Switch Magnet	Circular	00-555828
Door Handle	Edgemount Latch Kit	00-555881

Blast Chill & Shock Freeze Operating Instructions.

Standard Operation

When mains electrical power is first applied to the controller it will carry out a self-test function, for approximately 3 seconds. During this period the display will show.

On completion of the self test, the controller will revert to the last chill program that was run (Pre-chill, Soft Chill, Hard Chill, Hard Chill Max, Shock Freeze, Professional 1, Professional 2, or Professional 3). The availability of these is dependent on how the controller has been configured.

The example shows the controller in Hard Chill mode with the previous and next programs indicated at the top of the display. To change the program rotate the dial, either clockwise or anticlockwise to select the type of program you require.(for guidelines refer to page 7)

To initiate the program just press and release the dial for the program to start.

The program starts with the screen on the left being displayed for 2 minutes. After which the intelligent probe determines if the cycle is controlled by time, displayed by the screen in the middle, or by temperature as displayed by the screen on the right.

On completion of the program the controller will cause the blast chiller to enter the Hold Mode, as displayed on the left. An alarm will sound, press and release the dial to cancel the alarm, if the alarm is not cancelled the blast chiller will still enter the Hold Mode with the periodical sounding of the alarm. To cancel press and release the dial.

To stop the blast chiller during operation, press and hold the dial for 2 seconds, the display returns to the program selection screen.

At any time when the blast chiller is operational the dial can be rotated to give information on the status of the particular mode of operation.

The display will remain for 10 seconds and then revert to the normal operating screen automatically.

Pre Chill
This program is used to Pre Chill the cabinet prior to the first cycle. This is done with the Blast Chiller empty and is a short time based program of about 20 minutes.
It is generally recognised as the correct method of preparing for a blast chill cycle.
The program is selected by rotating the dial until the display shows, press and release the dial to start the program.

Defrost.
Defrosting is not normally required but if there is an ice build up on the coil inside the cabinet a manual defrost can be selected. Rotate the dial until the Defrost screen, below left, is displayed.
Press and release the dial to start the defrost.
During defrost the screens will alternate between the middle and right hand screens.
Defrost will last 20 minutes and when completed the alarm will sound. Press the dial to acknowledged or if not wait until it comes to the end of the alarm period, the alarm will stop and the display will revert to the previous screen.


**Further Operational Features.**

Chill time adjustment. (All programs excluding Professional 1, 2 or 3)
Whilst in the pre-programmed selection screen press and hold the dial for 2 seconds, the information screen will be displayed, below left. Press and release the dial to move to the time set, see below right. Rotate the dial clockwise to increase the time, anticlockwise to decrease. Once the time has been selected, press and release the dial and 'CHILL TEMP' will be highlighted.
On completion press and hold the dial for 2 seconds to return to the program selection screen, to continue press and release the dial for the program to start.
On completion of the program the time changes will revert to the default settings.
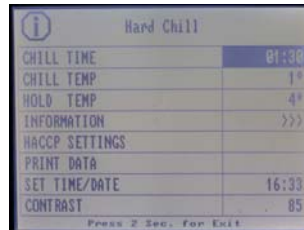
Chill / Hold temperature adjustments. (Professional 1, 2 or 3 only)
Professional 1, 2 and 3, if configured, are programs that can be used to tailor the chill time and temperature to suit specific product requirements.
Adjust the 'CHILL TIME' as above. With the 'CHILL TEMP' highlighted, below second from the left, press and release the dial to move to the temp set, below second from the right. Rotate the dial clockwise to increase the time, anticlockwise to decrease. Once the time has been selected, press and release the dial and 'HOLD TEMP' will be highlighted. Follow the procedure for changing chill temp to change the hold temp.
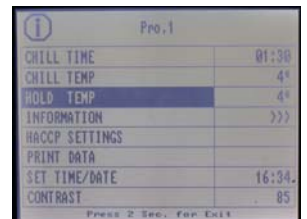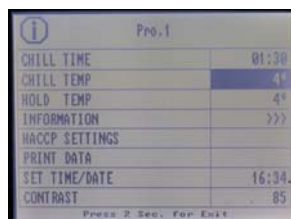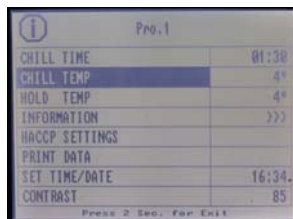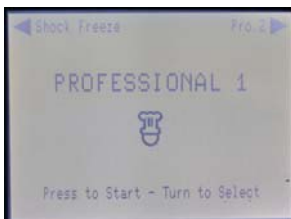
On completion press and hold the dial for 2 seconds to return to the program selection screen, to continue press and release the dial for the program to start.
The chill time and chill / hold temperature adjusted settings are retained for professional 1, 2 and 3 programs and will not revert to the default.

Information

Whilst in the program selection screen press and hold the dial for 2 seconds, the information screen will be displayed. Rotate the dial until 'INFORMATION' is highlighted. Press and release the dial to display the screen showing the last run cycle. The information relates to date, program run, start time, start temperature and end temperature.

HACCP settings.

Whilst in the program selection screen press and hold the dial for 2 seconds, the information screen will be displayed. Rotate the dial until 'HACCP SETTINGS' is highlighted. Press and release the dial to access the HACCP option screen. Press and release the dial to move to the selection screen for long or short reports, rotate the dial to select which option, once selected press and release the dial to confirm.

Press and release the dial to move to the selection screen for the print sample, select 3 or 5 minute selection rate.

On completion press and hold the dial for 2 seconds to return to the program selection screen.

Print Data.

Whilst in the program selection screen press and hold the dial for 2 seconds, the information screen will be displayed. Rotate the dial until 'PRINT DATA' is highlighted. If using a hand held printer switch the printer on now. Point the printer at the infra red download sensor (optional), located in display area, press and release the dial to download the print data.

On completion press and hold the dial for 2 seconds to return to the program selection screen.

Set time and date.

Whilst in the program selection screen press and hold the dial for 2 seconds, the information screen will be displayed, below left. Rotate the dial until 'SET TIME/DATE' is highlighted. Press and release the dial to access the service screen, below right. Press and release the dial to move to the displayed time in hours and minutes, rotate the dial to alter the time, once the correct time has been achieved press and release the dial to move to 'DAY'. If it is necessary to change the day, month and year change the settings using the same procedure for setting the time.

On completion press and hold the dial for 2 seconds to return to the program selection screen.

Changing Text Language.

Whilst in the program selection screen press and hold the dial for 2 seconds, the information screen will be displayed continue pressing the dial for a further 2 seconds to display the 'SERVICE MENU'. LANGUAGE will be highlighted, press and release the dial, 'ENG' (English) will be highlighted. Rotate the dial to change the language. Select the preferred language, press and release the dial to confirm.

Screen Saver

The screen saver screen is displayed if the machine is not used for 20 minutes, providing power is connected to it. It shows a series of 'Z' indicating sleep mode. Pressing and releasing the dial or opening the door will awaken the unit, the program selection screen will be displayed.

Alarms and Warnings

Air Probe: If this alarm occurs it will remain in the program selected until it is completed, however no further operation will be possible. Call your Foster Authorised Service Company.

Evap Probe: If this alarm occurs it will remain in the program selected until it is completed, however no further operation will be possible. Call your Foster Authorised Service Company.

Food Probe: If this alarm occurs it will automatically change to a timed program until it is completed, however no further operation will be possible. Call your Foster Authorised Service Company.

Door Open: The display will continue to show the alarm message until the door is closed. If this does not cancel the alarm call your Foster Authorised Service Company.

High Temperature: This alarm will only occur in the hold mode only. Probe the product to determine it is at the correct temperature. If it is at the correct temperature place in a storage refrigerator or freezer and call your Foster Authorised Service Company. If the product temperature is above the guidelines check the chill time selected or the weight of product being chilled does not exceed the specification for the Cabinet.

HP Switch: Causes for this alarm could be:
Does the product temperature exceed 90°c. Has too much product been placed in the cabinet. Is the airflow restricted. Does the condenser filter require cleaning. If the problem persists call your Foster Authorised Service Company.

Power Fail: If the power fails for up to five minutes the unit will re-start on the resumption of the power supply without affecting the selected cycle. Longer than five minutes and the controller will enter the hold mode. To check the cycle operation look in the information screen to check the cycle time.
To re-start press and release the dial, the screen will return to the hold screen. Press and hold the dial for two seconds the display returns to the program selection.

There are Three main programmes RBC 20-60 Blast Chiller.

Soft Chill- for the safe chilling of delicate products such as gateaux and patisserie items, and high water content items such as vegetables, rice and pasta.

Hard Chill- For general purpose chilling. The Hard Chill cycle is ideal for chilling 'standard products' such as meat pies, lasagne, individually portioned meals etc. Providing surface protection for the later part of the program.

Hard Chill Max- For high density and high fat content products such as meat joints, stews and sous vide.

Guide for Blast Chilling.

Food Type	Includes	Blast Chill Programme required	Time required to Blast Chill (Minutes)
Meat	Beef, pork, lamb, poultry & mince	Hard	40 - 90
Fish	Fried, poached or baked – haddock, plaice, salmon, cod fillets etc	Soft	30 - 90
Prepared dishes	Stews & casseroles, lasagne, risotto, shepherds pie	Hard	50 - 90
Vegetables & Pulses	Steamed or roasted veg, rice and potatoes etc.	Soft	30 - 90
Fruit	Stewed and cooked fruits.	Soft	60 – 90
Bakery	Cakes	Hard	30 – 90
Bakery	Pastries	Hard	60 – 90
Desserts	Fruit Based desserts & egg based flans.	Soft	30 – 90
Desserts	Sponge puddings and dense desserts such as cheesecake.	Hard	30 – 90

NOTE: All times listed should be used as a guide only, and will depend on type, size and quantity.

Electrical Connections.

Inputs.

L	-	Mains 'Live' supply (115V 230V, 50Hz / 60Hz). 4 terminals.
N	-	Mains 'Neutral' supply – 16 terminals.
E	-	Protective Earth – 16 terminals.

DOOR	-	Door Switching connection (not voltage carrying).
DOOR2	-	Safety door switch connection (not voltage carrying).
HP	-	High Pressure switch connection (not voltage carrying).

TA	-	Air probe connection.
TE	-	Evaporator probe connection.
FP1	-	Food/ product temperature connection.
FP2	-	Additional second food / product temperature probe connection.
FP3	-	Additional third food / product temperature probe connection.

Outputs.

C1	-	Condensing system switched relay (30A/ 8A) – normally open (NO) output – 3 terminals.
F1	-	Evaporator fan 1 switch relay (8A/ 4A) – normally open (NO) output – 3 terminals.
F2	-	Evaporator fan 2 switch relay (8A/ 4A) – normally open (NO) output – 3 terminals.
D1	-	Defrost system switched relay (8A/ 4A) – normally open (NO) output – 3 terminals.
S1	-	UV light system switched relay (8A/ 4A) – normally open (NO) output 2 terminals.
A1	-	Alarm relay (8A/ 4A) normally closed (NC) – 1 terminal, normally open (NO) 2 terminals.
P1	-	Capacity relay (8A/ 4A) normally closed (NC) – 1 terminal, normally open (NO) 2 terminals.

Display Power	-	Man Machine socket 2 – way connection.
Display Data	-	Man Machine RJ54 Type 4 – way connection.
Logger	-	4 – way RS 485 connections.

Service Information

Refer to the operating instructions on page 4 for operating instructions.
When mains electrical power is first applied to the controller it will carry out a self test function, for approximately 3 seconds, to ensure that there are good connections between the component parts. During this period the display will show.

The information displayed in the centre of the screen refers to which of the profiles the controller is set for.
The software version relates to the software release. The number relates to the major operating changes or model variants. The letter relates to the minor operating changes that may have been made from the original, such as parameter settings.

On completion of the self test the controller will revert to the last chill program that was run (Pre-chill, Soft Chill, Hard Chill, Hard Chill Max, Shock Freeze, Professional 1, Professional 2, or Professional 3). The availability of these is dependent on how the controller has been configured. The example below shows the controller in Hard Chill.


Press and hold the dial for 5 seconds.
Firstly the display will display the information page, below left, continue pressing until the 'SERVICE' screen is displayed, below right. For changes to language see page 5.
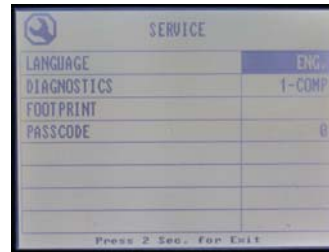
Diagnostics

Rotate the dial until you reach 'Diagnostics', below left, press and release the dial to highlight the component. In this program you can test each of the major components on the machine in sequence, 1- COMPRESSOR, 2-FAN1, 3-FAN2, 4- DEFROST, 5- ALARM, 6- CCAP (Capacity Control), 7- UV-L (UV light if fitted), ESC (escape). Rotate the dial until the relay output is highlighted, once selected press and the dial to test the relay, the relay will remain energised for as long as it is pressed. On completion of the test you must rotate the dial until you highlight 'ESC' press and release the dial to move to the next program.
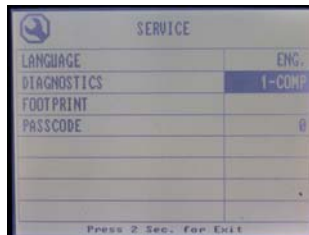
Function Test

Rotate the dial until you reach 'FOOTPRINT', see below, press and release the dial to initiate the controller function self test.
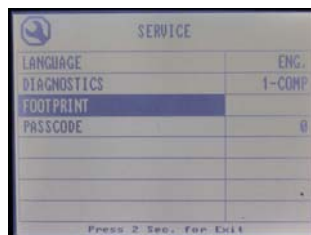

This allows for the engineer to test the operation of the machine without having to wait for a full program to run. The test lasts for ten minutes and should be carried out with the cabinet / room empty. Each of the relays will be energised to simulate the chill process. Relay 1-COMPRESSOR, Relay 2-FAN1, Relay 3-FAN2, Relay 4-DEFROST, Relay 5-ALARM, Relay 6-CCAP (Capacity Control), and Relay 7- UV-L will all be switched on and of automatically in a pre determined manner to simulate program operation (whether they are connected or not).

The test is based around an algorithm built into the software. Prior to starting the program it is advisable to place a probe, in the centre of the cabinet/room, attached to an independent measuring device to check the air temperature as the air, coil and food probes are not active during this program. The temperature achieved will depend on the model. The air temperature should be checked 5 to 6 minutes into the program. The temperature achieved should be the minimum temperature and can be checked against the model type found in the parameter table on page 9. (For further information go to page 19).

Once the test is completed the display reverts to the last chill program and not to the service parameters.

Passcode.

Rotate the dial until you reach 'PASSCODE', below left, press and release the dial to highlight the code, below right. Rotate the dial until you reach the code '131'. Once achieved press and release the dial to acknowledge.
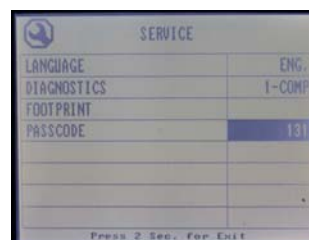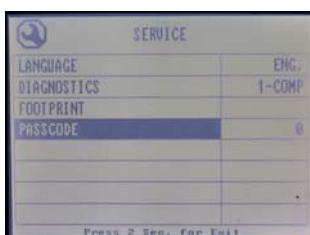
Profiles.

You are now in the program profiles. The controller has 9 operating programs – Pre Chill, Soft Chill, Hard Chill, Hard Chill Max, Shock Freeze, Professional 1, Professional 2, Professional 3, Defrost and 2 optional programs – UV Sanitisation and Information. These programs are all available depending upon which of the profiles are selected, see below.
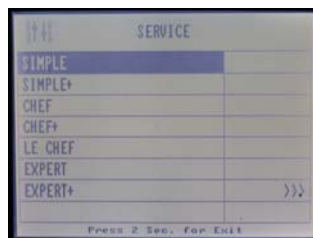
To change the profile rotate the dial to select program, press and release the dial to accept the change. The 3 chevrons in the box opposite the selected program confirm the change.

The default operating profile for the RBC20-60 and RBC20-60R is **'LE CHEF'**.

The table identifies which programs are available from the profile with 'LE CHEF' highlighted.

PROGRAMS	PROFILES						
	SIMPLE	SIMPLE +	CHEF	CHEF+	LE CHEF	EXPERT	EXPERT+
PRE CHILL	✗	✗	✗	✗	✓	✓	✓
SOFT CHILL	✗	✗	✓	✓	✓	✓	✓
HARD CHILL	✓	✓	✓	✓	✓	✓	✓
HARD CHILL MAX	✗	✗	✓	✓	✓	✓	✓
SHOCK FREEZE	✗	✓	✗	✓	✗	✗	✓
PROFESSIONAL 1	✗	✗	✗	✗	✗	✓	✓
PROFESSIONAL 2	✗	✗	✗	✗	✗	✓	✓
PROFESSIONAL 3	✗	✗	✗	✗	✗	✓	✓
DEFROST	✓	✓	✓	✓	✓	✓	✓
UV SANITISATION	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
INFORMATION	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL

Parameter Access.

From the profile screen once the selection has been made press and release the dial to access the parameter list. The screen will display the parameters as shown in the screen below left. To access the system parameters rotate the dial anticlockwise see below right.
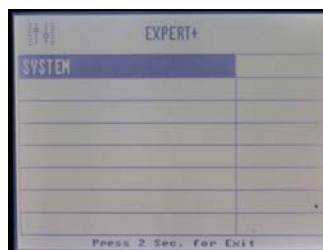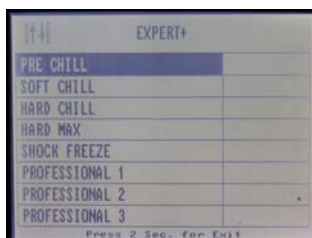
Selection is made by pressing and releasing the dial.

The table below contains the complete parameter list and includes the selectable range and default values.

Parameters

PARAMETER	DESCRIPTION	VALUE	MINIMUM	MAXIMUM	DEFAULT
PRE-CHILL					
PO1	AIR TEMP	°C	-15	15	-10
PO2	CHILL TIME	MINUTES	5	60	15
PO3	HOLD TEMP	°C	-10	15	3
SOFT-CHILL					
PO4	AIR TEMP	°C	-10	15	1
PO5	CHILL TIME	MINUTES	5	480	90
PO6	CHILL TEMP	°C	-5	15	3
PO7	HOLD TEMP	°C	-5	15	3
HARD CHILL					
PO8	AIR TEMP	°C	-20	15	-15
PO9	CHILL TIME	MINUTES	5	480	90
P10	CHILL TEMP	°C	-15	15	3
P11	HOLD TEMP	°C	-15	15	3
P12	CHANGE TIME	%	5	95	80
P13	CHANGE TEMP	%	5	95	80

	HARD MAX				
P14	AIR TEMP	°C	-20	15	-15
P15	Chill Time	MINUTES	5	480	90
P16	CHILL TEMP	°C	-15	15	3
P17	HOLD TEMP	°C	-15	15	3
	SHOCK FREEZE				
P18	AIR TEMP	°C	-35	15	-30
P19	CHILL TIME	MINUTES	5	480	240
P20	CHILL TEMP	°C	-35	15	-21
P21	HOLD TEMP	°C	-35	15	-21
	PROFFESSIONAL 1				
P22	Air Temp. Std.	°C	-20	15	-15
P23	Chill Time Std.	Minutes	P24	P25	90
P24	Chill Time Minimum	Minutes	5	60	5
P25	Chill Time Maximum	Minutes	60	480	240
P26	Chill Temp. Std.	°C	P27	P28	3
P27	Chill Temp. Minimum	°C	-20	-5	-10
P28	Chill Temp. Maximum	°C	-5	15	5
P29	Hold Temp. Std.	°C	P30	P31	3
P30	Hold Temp. Minimum	°C	-10	0	0
P31	Hold Temp. Maximum	°C	0	10	10
P32	Change Time	%	5	95	80
P33	Change Temp.	%	5	95	80
	PROFFESSIONAL 2				
P34	Air Temp. Std.	°C	-20	15	-15
P35	Chill Time Std.	Minutes	P36	P37	90
P36	Chill Time Minimum	Minutes	5	60	5
P37	Chill Time Maximum	Minutes	60	480	240
P38	Chill Temp. Std	°C	P39	P40	3
P39	Chill Temp. Minimum	°C	-20	-5	-10
P40	Chill temp. Maximum	°C	-5	15	5
P41	Hold Temp. Std.	°C	P42	P43	3
P42	Hold Temp. Minimum	°C	-10	0	0
P43	Hold Temp. Maximum	°C	0	10	10
P44	Change Time	%	5	95	80
P45	Change Temp.	%	5	95	80
	PROFESSIONAL 3				
P46	Air Temp. Std.	°C	-20	15	-15
P47	Chill Time Std.	Minutes	P48	P49	90
P48	Chill Time Minimum	Minutes	5	60	5
P49	Chill Time Maximum	Minutes	60	480	240
P50	Chill Temp. Std.	°C	P51	P52	3
P51	Chill Temp. Minimum	°C	-20	-5	-10
P52	Chill Temp. Maximum	°C	-5	15	5
P53	Hold Temp. Std.	°C	P54	P55	3
P54	Hold Temp. Minimum	°C	-10	0	0
P55	Hold Temp. Maximum	°C	0	10	10
P56	Change Time	%	5	95	80
P57	Change Temp.	%	5	95	80
	SYSTEM				
P58	UV Light Enable	Minutes	0	120	0
P59	HACCP Enable	Function	NO	YES	NO
P60	Shock Chill Temp.	Function	NO	YES	NO
P61	Chill Hysteresis	°K	2	20	4
P62	Hold Hysteresis	°K	2	20	4
P63	APM Time	Minutes	0	30	2
P64	APM Differential	°K	0	20	10
P65	FAN 1 Hold Operation	Function	OFF/ CYCLE/ AUTO/ ON		AUTO
P66	FAN 2 Hold Operation	Function	OFF/ CYCLE/ AUTO/ ON		AUTO
P67	Capacity Enable	Function	OFF/ AUTO/ ON		ON
P68	Capacity Hysteresis	°K	2	20	5
P69	Defrost Type	Function	OFF/ ELE/ GAS		OFF
P70	Smart Defrost Inc	Integer	0	240	30
P71	Defrost End Time	Minutes	1	60	20
P72	Defrost End Temp.	°C	0	50	20
P73	Drain Time.	Minutes	0	30	1
P74	Fan Delay Temp.	°C	-15	15	5
P75	Duty Cycle	%	0	100	60
P76	Comp. Rest Time	Minutes	0	30	3
P77	HP Switch	Function	NO	YES	YES
P78	Door Switch 2	Function	NO	YES	NO
P79	Door Switch 1	Function	NO	YES	YES
P80	Door Stop	Minutes	0	30	1
P81	Door Alarm Delay	Minutes	0	30	5
P82	High Alarm Temp.	°K	0	50	10
P83	High Alarm Delay	Minutes	0	120	30
P84	Alarm Time	Minutes	0	120	1
P85	Alarm Repeat Interval	Minutes	0	480	0

P86	Alarm Buzzer	Function	NO	YES	NO
P87	Air Probe Offset	°K	-15	15	0
P88	Coil Probe Offset	°K	-15	15	0
P89	Food 1 Offset	°K	-15	15	0
P90	Food 2 Enable	Function	NO	YES	NO
P91	Food 2 Offset	°K	-15	15	0
P92	Food 3 Enable	Function	NO	YES	NO
P93	Food 3 Offset	°K	-15	15	0
P94	Address	Integer	1	255	255

Parameter Definitions

Pre-Chill

P01   Pre-Chill Enable
The air temperature, which the air probe must read before the condensing system is de-energised in the chill mode of the Pre-Chill Program.
Range -15°C to 15°C.

P02   Chill Time
The period Pre-Chill is in the chill mode prior entering the Hold Mode.
Range 5 minutes to 60 minutes.

P03   Hold Temp
The temperature, which the air probe must read before the condensing system is de-energised in the Hold mode of the Pre-Chill program.
Range -15°C to 15°C.

Soft-Chill

P04   Air Temp
The temperature, which the air probe must read before the condensing system is de-energised in the chill mode of the Soft-Chill Program.
Range -10°C to 15°C.

P05   Chill Time
The period Soft Chill program is in chill mode prior to entering Hold mode in a time based chill cycle.
Range 5 minutes to 480 minutes.

P06   Chill Temp
The temperature, which the Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Soft Chill program prior to entering the Hold mode of a temperature based cycle.
Range -5°C to 15°C.

P07   Hold Temp
The temperature, which the air probe must read before the condensing system is de-energised in the Hold mode of the Soft Chill program.
Range -5°C to 15°C.

Hard Chill

P08   Air Temp
The temperature, which the air probe must read before the condensing system is de-energised in the chill mode of the Hard Chill Program.
Range -20°C to 15°C.

P09   Chill Time
The period Hard Chill program is in chill mode prior to entering Hold mode in a time based chill cycle.
Range 5 minutes to 480 minutes.

P10   Chill Temp
The temperature, which the Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Hard Chill program prior to entering the Hold mode of a temperature based cycle.
Range -15°C to 15°C.

P11   Hold Temp
The temperature, which the air probe must read before the condensing system is de-energised in the Hold mode of the Hard Chill program.
Range -15°C to 15°C.

P12   Change Time
The percentage period of a time based chill cycle, which is to have passed before automatically adjusting the air temperature set point to 1°C.The range is adjustable in 5% increments.
Range 05% to 95%.

P13   Change Temp
The percentage of a temperature based chill cycle, which is passed before automatically adjusting the air temperature set point to 1°C.The range is adjustable in 5% increments.
Range 5% to 95%.

Hard Max
P14   Air Temp
The temperature, which the air probe must read before the condensing system is de-energised in the chill mode of the Hard Chill Max Program.
Range -20°C to 15°C.

P15   Chill Time
The period Hard Chill Max program is in chill mode prior to entering Hold mode in a time based chill cycle.
Range 5 minutes to 480 minutes.

P16   Chill Temp
The temperature, which the Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Hard Chill Max program prior to entering the Hold mode of a temperature based cycle.
Range -15°C to 15°C.

P17   Hold Temp
The temperature, which the air probe must read before the condensing system is de-energised in the Hold mode of the Hard Chill Max program.
Range -15°C to 15°C.

Shock Freeze
P18   Air Temp
The temperature, which the air probe must read before the condensing system is de-energised in the chill mode of the Shock Freeze Program.
Range -35°C to 15°C.

P19   Chill Time
The period Shock Freeze program is in chill mode prior to entering Hold mode in a time based chill cycle.
Range 5 minutes to 480 minutes.

P20   Chill Temp
The temperature, which the Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Shock Freeze program prior to entering the Hold mode of a temperature based cycle.
Range -15°C to 15°C.

P21   Hold Temp
The temperature, which the air probe must read before the condensing system is de-energised in the Hold mode of the Shock Freeze program.
Range -35°C to 15°C.

Professional 1
P22   Air Temp Std
The standard temperature, which the air probe must read before the condensing system is de-energised in the chill mode of the Professional 1 Program.
Range -20°C to 15°C.

P23   Chill Time Std
The standard period Professional 1 program is in chill mode prior to entering Hold mode in a time based chill cycle.
Range 5 minutes to 480 minutes.

P24   Chill Time Minimum
The minimum period Professional 1 program is in chill mode prior to entering Hold mode in a time based chill cycle that it can be adjusted to by the operator.
Range 5 minute to 60 minutes.

P25   Chill Time Maximum
The maximum period Professional 1 program is in chill mode prior to entering Hold mode in a time based chill cycle that it can be adjusted to by the operator.
Range 60 minute to 480 minutes.

P26   Chill Temp Std
The standard temperature, which the Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Professional 1 program prior to entering the Hold mode of a temperature based cycle.
Range -15°C to 15°C.

P27 **Chill Temp Minimum**
The minimum value that the temperature, which Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Professional 1 program, prior to entering the Hold mode of a temperature based cycle, which it can be adjusted to by the operator.
Range -20°C to -5°C.

P28 **Chill Temp Maximum**
The maximum value that the temperature, which Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Professional 1 program, prior to entering the Hold mode of a temperature based cycle, which it can be adjusted to by the operator.
Range -5°C to -15°C.

P29 **Hold Temp Std**
The standard temperature, which the air probe must read before the condensing system is de-energised in the Hold mode of the Professional 1 Program.
Range -15°C to 15°C.

P30 **Hold Temp Minimum**
The minimum value that the Hold temperature set point can be adjusted to by the operator in the Professional 1 program.
Range -10°C to 0°C.

P31 **Hold Temp Maximum**
The maximum value that the Hold temperature set point can be adjusted to by the operator in the Professional 1 program.
Range 0°C to 10°C.

P32 **Change Time**
The percentage period of a time based chill cycle, which is to have passed before automatically adjusting the air temperature set point to 1°C.The range is adjustable in 5% increments.
Range 05% to 95%.

P33 **Change Temp**
The percentage of a temperature based chill cycle, which is passed before automatically adjusting the air temperature set point to 1°C.The range is adjustable in 5% increments.
Range 5% to 95%.

Professional 2
P34 **Air Temp Std**
The standard temperature, which the air probe must read before the condensing system is de-energised in the chill mode of the Professional 2 Program.
Range -20°C to 15°C.

P35 **Chill Time Std**
The standard period Professional 2 program is in chill mode prior to entering Hold mode in a time based chill cycle.
Range 5 minutes to 480 minutes.

P36 **Chill Time Minimum**
The minimum period Professional 2 program is in chill mode prior to entering Hold mode in a time based chill cycle that it can be adjusted to by the operator.
Range 5 minute to 60 minutes.

P37 **Chill Time Maximum**
The maximum period Professional 2 program is in chill mode prior to entering Hold mode in a time based chill cycle that it can be adjusted to by the operator.
Range 60 minute to 480 minutes.

P38 **Chill Temp Std**
The standard temperature, which the Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Professional 2 program prior to entering the Hold mode of a temperature based cycle.
Range -15°C to 15°C.

P39 **Chill Temp Minimum**
The minimum value that the temperature, which Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Professional 2 program, prior to entering the Hold mode of a temperature based cycle, which it can be adjusted to by the operator.
Range -20°C to -5°C.

P40   Chill Temp Maximum
The maximum value that the temperature, which Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Professional 2 program, prior to entering the Hold mode of a temperature based cycle, which it can be adjusted to by the operator.
Range -5°C to -15°C.

P41   Hold Temp Std
The standard temperature, which the air probe must read before the condensing system is de-energised in the Hold mode of the Professional 2 Program.
Range -15°C to 15°C.

P42   Hold Temp Minimum
The minimum value that the Hold temperature set point can be adjusted to by the operator in the Professional 2 program.
Range -10°C to 0°C.

P43   Hold Temp Maximum
The maximum value that the Hold temperature set point can be adjusted to by the operator in the Professional 2 program.
Range 0°C to 10°C.

P44   Change Time
The percentage period of a time based chill cycle, which is to have passed before automatically adjusting the air temperature set point to 1°C.The range is adjustable in 5% increments.
Range 05% to 95%.

P45   Change Temp
The percentage of a temperature based chill cycle, which is passed before automatically adjusting the air temperature set point to 1°C.The range is adjustable in 5% increments.
Range 5% to 95%.

Professional 3
P46   Air Temp Std
The standard temperature, which the air probe must read before the condensing system is de-energised in the chill mode of the Professional 3 Program.
Range -20°C to 15°C.

P47   Chill Time Std
The standard period Professional 3 program is in chill mode prior to entering Hold mode in a time based chill cycle.
Range 5 minutes to 480 minutes.

P48   Chill Time Minimum
The minimum period Professional 3 program is in chill mode prior to entering Hold mode in a time based chill cycle that it can be adjusted to by the operator.
Range 5 minute to 60 minutes.

P49   Chill Time Maximum
The maximum period Professional 3 program is in chill mode prior to entering Hold mode in a time based chill cycle that it can be adjusted to by the operator.
Range 60 minute to 480 minutes.

P50   Chill Temp Std
The standard temperature, which the Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Professional 3 program prior to entering the Hold mode of a temperature based cycle.
Range -15°C to 15°C.

P51   Chill Temp Minimum
The minimum value that the temperature, which Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Professional 3 program, prior to entering the Hold mode of a temperature based cycle, which it can be adjusted to by the operator.
Range -20°C to -5°C.

P52   Chill Temp Maximum
The maximum value that the temperature, which Food Probe 1 must read before the condensing system is de-energised in the chill mode of the Professional 3 program, prior to entering the Hold mode of a temperature based cycle, which it can be adjusted to by the operator.
Range -5°C to -15°C.

P53 **Hold Temp Std**
The standard temperature, which the air probe must read before the condensing system is de-energised in the Hold mode of the Professional 3 Program.
Range -15°C to 15°C.

P54 **Hold Temp Minimum**
The minimum value that the Hold temperature set point can be adjusted to by the operator in the Professional 3 program.
Range -10°C to 0°C.

P55 **Hold Temp Maximum**
The maximum value that the Hold temperature set point can be adjusted to by the operator in the Professional 3 program.
Range 0°C to 10°C.

P56 **Change Time**
The percentage period of a time based chill cycle, which is to have passed before automatically adjusting the air temperature set point to 1°C.The range is adjustable in 5% increments.
Range 05% to 95%.

P57 **Change Temp**
The percentage of a temperature based chill cycle, which is passed before automatically adjusting the air temperature set point to 1°C.The range is adjustable in 5% increments.
Range 5% to 95%.

System
P58 **UV Light Enable**
Determines whether the user can select the UV sanitisation.
Minutes 0 = disabled, 1 to 120 = enabled (set the time between 1 and 120 to determine the length of the program).

P59 **HACCP Enable**
Determines whether the logging system is available to the user.
Function, YES = enabled. NO = disabled.

P60 **Shock Freeze Temp**
Allows for the probe to be used in the Shock Freeze mode.
Function, YES = enables. NO = disables.

P61 **Chill Hysteresis**
Allowable temperature increase from chill cycle air temperature Set Point before switching on the refrigeration system.
Range 02°K to 20°K.

P62 **Hold Hysteresis**
Allowable temperature increase from hold cycle air temperature Set Point before switching on the refrigeration system.
Range 02°K to 20°K.

P63 **APM Time**
Automatic Program Mode Time. The time period that must pass before the air temperature and Food Probe 1 temperature are compared to determine whether the cycle is time or temperature based.
00 = Instantaneous decision. 01 to 30 = the time selected determines the start time decision.

P64 **APM Differential**
Automatic Program Mode Differential. The difference in temperature between the air temperature and food probe 1 temperature after APM time to determine whether the cycle is time or temperature based. If air probe temperature + the APM differential is greater than or equal to food temperature the chill cycle will be time based. If air probe temperature + APM differential is less than the food probe temperature the chill cycle will be temperature based.
Range 0°K to 20°K.

P65 **FAN 1 Hold Operation**
Determines the evaporator fan relay energisation during 'Hold' mode.
'OFF'   = Evaporator fan 1 relay is not energised in 'Hold'.
'CYCLE'   = Evaporator fan 1 relay cycles with condensing system relay in 'Hold'.
'AUTO'   = Evaporator fan 1 relay cycles with condensing system and fan hysteresis in 'Hold'.
'ON'   = Evaporator fan 1 relay is always energised in 'Hold'.

Note: The fan 1 hold operation does not effect routine defrost operation.

P66   FAN 2 Hold Operation
Determines the evaporator fan relay energisation during 'Hold' mode.
'OFF'   = Evaporator fan 2 relay is not energised in 'Hold'.
'CYCLE'   = Evaporator fan 2 relay cycles with condensing system relay in 'Hold'.
'AUTO'   = Evaporator fan 2 relay cycles with condensing system and fan hysteresis in 'Hold'.
'ON'   = Evaporator fan 2 relay is always energised in 'Hold'.
Note: The fan 2 hold operation does not effect routine defrost operation.

P67   Capacity Enable
Determines if Capacity Control is enabled.
'OFF'   = Capacity is disabled.
'AUTO'   = Capacity is enabled in chill and hold modes in conjunction with Capacity Hysteresis.
'ON'   = Capacity is enabled (in hold mode only).

P68   Capacity Hysteresis
The differential value at which capacity control is de-energised.
Capacity control is disabled during the chill hold cycle (Capacity Enable set to 'Auto') if the temperature = program air set point + chill hysteresis + capacity hysteresis (rising from chill set point). During hold (Capacity Enable set to 'Auto' or 'On') if the temperature = hold air set point + hold hysteresis + capacity hysteresis (rising from hold air set point).
Range 2°C to 20°C.

P69   Defrost Type
Identifies the type of defrost cycle to be initiated either standard or manually.
OFF = Off cycle defrost. ELE = Electric defrost. GAS = Hot gas defrost.

P70   Smart Defrost Inc
DO NOT ADJUST.

P71   Defrost End Time
The length of time that the Defrost period will last before reverting to the chill or hold cycle.
Range 01minute to 60 minutes.

P72   Defrost End Temp
The coil temperature as detected by the evaporator probe at which the Defrost function will terminate before reverting back to chill or hold mode.
Range 0°C to 10°C.

P73   Drain Time
The time period following the defrost routine (terminated by time or temperature) that is allowed for 'melt water' to drain from the evaporator coil prior to the condensing system restarting.
00 = No drain down time. 01 to 30 = Drain down period in minutes.

P74   Fan delay Temp
The temperature the evaporator coil must reach following a defrost before the evaporator fan/s are allowed to re-start.
Range -15°C to 15°C.

P75   Duty Cycle
The percentage time that the condensing system will operate in order to maintain Hold temperature in the event of an air probe failure.
Range 0% to 100%.

P76   Comp. Rest Time
The forced rest period before the condensing system can be energised from when it was de-energised.
00 = Excludes compressor rest period. 01 to 30 = Compressor rest period in minutes.
Note: This is not a compressor start delay.

P77   HP Switch
Terminates the condensing system in the event of a high pressure developing in the refrigeration system as a result of, to high food temperature, condenser fan failure, blocked condenser, air flow restriction etc. Automatically re – sets when the normal working pressure is achieved.
YES = enabled. NO = disabled.

P78   Door Switch 2
Determines if a safety door switch is fitted. If enabled this will not allow any chill, defrost or UV Sanitisation programs to be run if the door is open.

NO = No safety door switch fitted. YES = Safety door switch fitted.
Note: Usually fitted to the evaporator fan door on Modular Blast Chillers.

P79   Door Switch 1
Determines if a door switch is fitted or not, and consequently dictates Evaporator Fan operation, UV Sanitisation operation and door alarm activation's. Also used to initiate the controller from the energy saving mode.
NO = No door switch fitted. YES = Door switch fitted.

P80   Door Stop
The delay period between the door being opened and the condensing unit stopping (only active if the 'Door Switch' is set to 'YES').
00 minutes = Condensing unit stops instantaneously. 01 to 30 minutes = Delay before unit stops.

P81   Door Alarm Delay
The delay following the 'Door Stop' period before the door open alarm sounds. Therefore if the 'Door Stop' is set for 1 minute, and the 'Door Alarm' is set to 5 minutes, the door alarm will sound 6 minutes after the door was opened. (Only active if 'Door Switch' = YES).
00 minutes = //instantaneous door alarm. 01 to 30 minutes = Delay before alarm sounds.

P82   High Alarm Temp
The temperature at which the alarm will sound to warn that the measured air temperature value is too high. The alarm sounding is dependent upon the selected program and the stage of the cycle. I.e. during a chill cycle if the measured temperature is greater than or equal to program air set point temperature + chill hysteresis + high alarm temperature value (after the appropriate alarm delay period) the alarm will sound. Similarly if the measured hold temperature is greater than or equal to program hold set point + hold hysteresis + high alarm temperature value the alarm will sound.
Range 1°C to 50°C.

P83   High Alarm Delay
The delay period between a temperature alarm condition occurring.
00 minutes = Instantaneous audible alarm. 01 to 120 minutes = period of delay.

P84   Alarm Time
The length of time, which the alarm will sound for an end of program cycle alarm or any other alarm warning prior to automatically muting.
00 minutes No alarm. 01 to 120 minutes = Alarm energised period.

P85   Alarm Repeat Interval
The length of time between an acknowledged alarm being automatically muted and the alarm sounder being re-energised.
00 minutes = No alarm reminder. 01 to 480 minutes = Alarm reminder period.

P86   Alarm Buzzer
Enables or disables the board alarm buzzer.
NO = Alarm disabled. YES = Alarm enabled.

P87   Air Probe Offset
Allows the value of the Air Probes to be offset allowing the product temperature to be accurately measured.
Range -15°C to +15°C

P88   Coil Probe Offset
Allows the value of the Evaporator Coil Probe to be offset allowing the coil temperature to be accurately measured.
Range -15°C to +15°C.

P89   Food 1 Offset
Allows the value of Food Probe 1 to be offset allowing for the product temperature to be accurately measured.
Range -15°C to +15°C.

P90   Food 2 Enable
Determines whether a second Food Probe is fitted.
NO = No second food probe fitted. YES = Second food probe fitted.

P91   Food 2 Offset
Allows the value of Food Probe 2 to be offset allowing for the product temperature to be accurately measured.
Range -15°C to +15°C.

P92   Food 3 Enable
Determines whether a third Food Probe is fitted.

NO = No third food probe fitted. YES = Third food probe fitted.

P93   **Food 3 Offset**
Allows the value of Food Probe 3 to be offset allowing for the product temperature to be accurately measured.
Range -15°C to +15°C.

P94   **Address**
The controller peripheral number. This is only necessary when controller are linked via a network to a computer management and data recording system (such as with the Foster TAB or ARGO systems).
Range 00 to 255.

Alarm and Warnings
In general if an alarm occurs the appropriate alarm symbol will be displayed and the alarm will sound to attract attention. The cabinet will attempt to continue running or to finish the cycle (if safe to do so).
The distinction between an alarm and a warning is that a warning may be a non-critical occurrence such as door open or temporary power failure. An alarm would be for a system failure such as a probe fault or high-pressure fault, which would require positive intervention.

High pressure developing in the refrigeration system as a result of, to high food temperature, condenser fan failure, blocked condenser, air flow restriction etc. Automatically re – sets when the normal working pressure is achieved.

Air Probe Fault

Evaporator Probe Fault

Food Probe Fault. If more than 1 probe are enabled the probe fault would be displayed accordingly

Door 2 open. Will not allow any chill, defrost or UV Sanitisation programs to be run if the door is open.

Ribbon cable between the power switching PCB and the display disconnected.
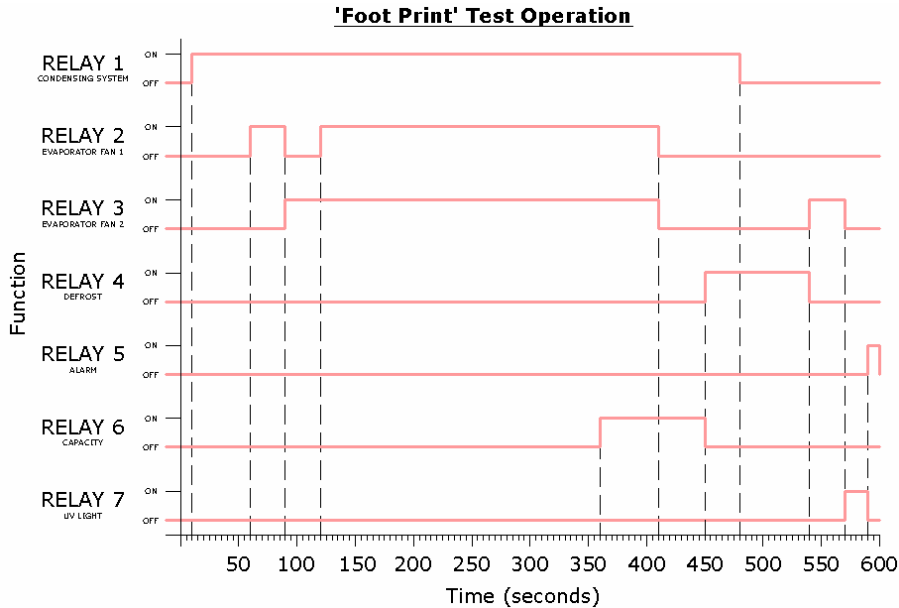
Foot Print Test operation

The foot print test is a method of checking the operation of the process in a reduced time period

The foot print test takes ten minutes.

The first ten seconds are used for the display test, after that the relays are energised in a simple operating pattern to ensure each are energised. During the final ten seconds the alarm is sounded to indicate the end of the test.

The graph below shows how the relays are energised relating to time.

The air, coil and food temperature probes are disregarded (the only exception is an over temperature alarm).

'Foot Print' Test Operation

Operation Summary

All relays commence Footprint test in the de-energised state.

- Relay 1 is energised after 10 seconds from start of test for 470 seconds (de-energises 480 seconds from start).
- Relay 2 is energised after 60 seconds from start of test for 30 seconds (de-energises 90 seconds from start).
- Relay 2 is energised again after 120 seconds from start of test for 300 seconds (de-energises 420 seconds from start).
- Relay 3 is energised after 90 seconds from start of test for 330 seconds (de-energises 420 seconds from start).
- Relay 3 is energised after 540 seconds from start of test for 30 seconds (de-energises 570 seconds from start).
- Relay 4 is energised after 450 seconds from start of test for 90 seconds (de-energises 540 seconds from start).
- Relay 5 is energised after 590 seconds from start of test for 10 seconds (de-energises 600 seconds from start).
- Relay 6 is energised after 360 seconds from start of test for 90 seconds (de-energises 450 seconds from start).
- Relay 7 is energised after 570 seconds from start of test for 20 seconds (de-energises 590 seconds from start).

All relays are de-energised on completion of the test.

At any point during the test pressing and holding the dial for 2 seconds can stop it. The test will be terminated and the display will revert to the last run cycle. Upon normal completion of the test the display will revert to the last run cycle (not the service parameters).

Probes

Air and Evaporator Probes

The air and evaporator probes are the same and are identified as T1 Air Probe and T2 Evaporator Probe. These are the thermistor type and are fully enclosed to make it completely waterproof and resilient to temperature variation within the limits of rapid cycling. The probe is capable of measuring temperature in excess of -30°C and 50°C with 1°K accuracy at 1°C and no more than 2°K at the upper and lower temperature ranges.

Food Probe

The food probe is inserted directly into the product that is being chilled to measure the core temperature. The resistance values are the same as for the air and evaporator probes.

Probe temperature resistance values

°C	K ohm	°C	K ohm	°C	K ohm	°C	K ohm	°C	K ohm
-40	44.657	-5	7.198	30	1.651	65	0.497	100	0.189
-35	33.505	0	5.716	35	1.371	70	0.426	105	0.166
-30	25.388	5	4.571	40	1.143	75	0.367	110	0.142
-25	19.402	10	3.682	45	0.958	80	0.318	115	0.125
-20	14.961	15	2.987	50	0.807	85	0.276	120	0.111
-15	11.644	20	2.437	55	0.683	90	0.24	125	0.099
-10	8.133	25	2	60	0.582	95	0.21		

Technical Data

	RBC20-60	RBC20-60R
Nominal Chilling Capacity	**60Kg**	**60Kg**
Duty @ -15°C	**3800w**	**3800w**
Fans	**3**	**3**
Evaporating Temperature	**-15°C**	**-15°C**
HP Switch Setting		
Refrigerant Control	**TEV**	**TEV**
Refrigerant	**R404a**	**R404a**
Refrigerant Quantity		
System 1	**1900grms**	
System 2	**1900grms**	
Electrical Supply	**400/3/50 – 16amp**	**230/1/50 13 amp (Fans & Defrost)**
Total Heat Rejection	**1500w**	

Important Note

There are two refrigeration systems on this model

Refrigerant used is R404A.

The RBC20-60 has two separate refrigeration systems comprising, two condensing units, a twin circuit condenser (see below) and a twin circuit evaporator. (See page 21for assembly details and page 22 for schematic dual circuit refrigeration layout).

The condenser fan on system 2 is controlled by the HP switch, which is set at **18 BAR** with a **3 BAR** diff.

The RBC20-60R has the same refrigeration systems but the condensing units are remotely sited.
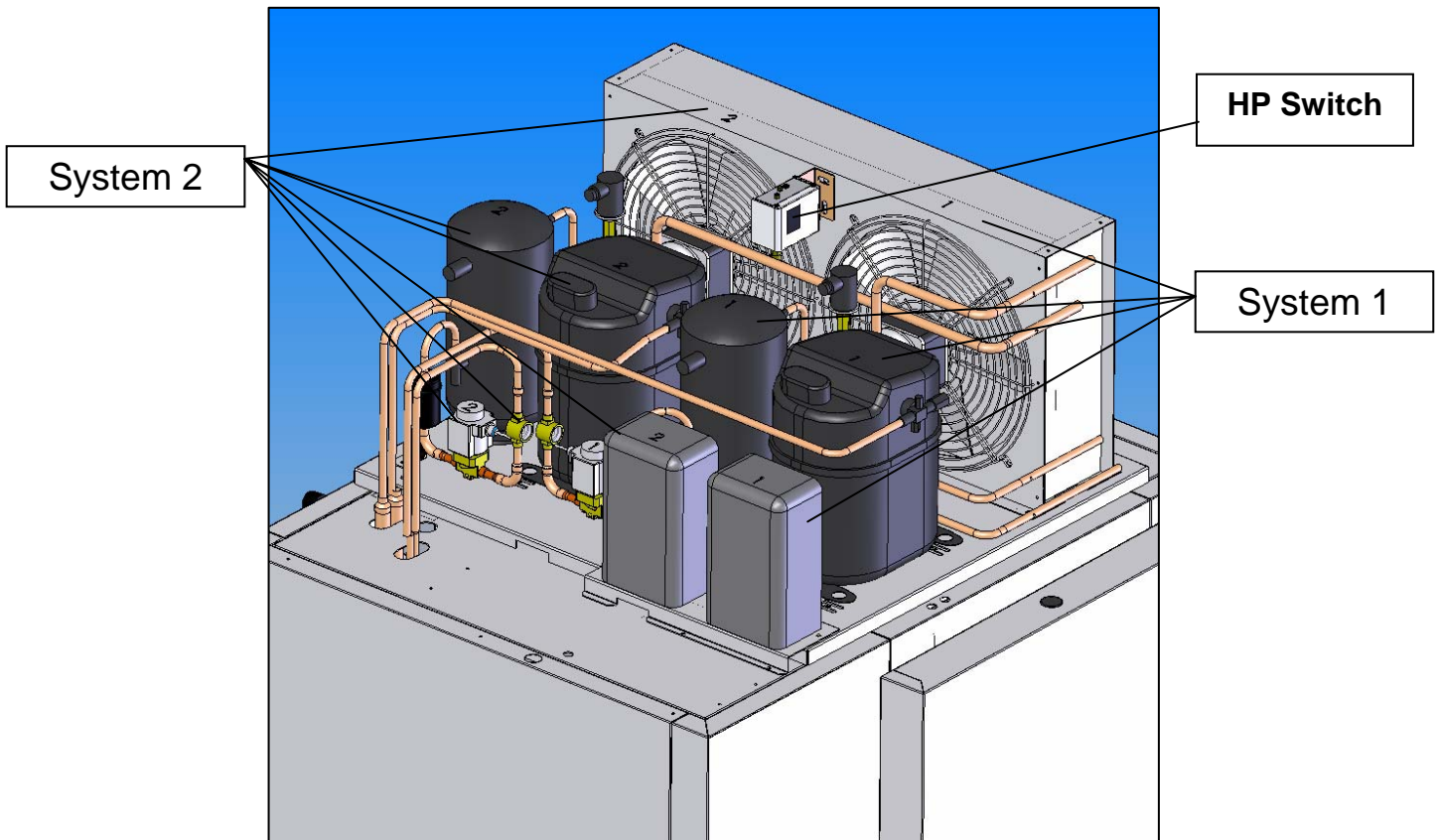
CONDENSING UNIT ASSEMBLY RBC20-60

The parameter 'Capacity Enable' is set to 'AUTO' to allow for both condensing units to be running at the start of the chill cycle therefore maximising the heat extraction from the product. On reaching 'HOLD' one of the condensing units will shut down. During the 'HOLD' mode one compressor will control the temperature throughout unless the temperature exceeds the capacity control limit.

Refrigerant control is by expansion valve to control the correct amount of refrigerant required to meet the demand of the evaporator. (See page 21 for assembly detail).

Expansion Valve Setting (Superheat)

Adjust the superheat by turning the expansion valve setting spindle anti clockwise until back seated then turn the setting spindle clockwise **THREE FULL TURNS IN**.
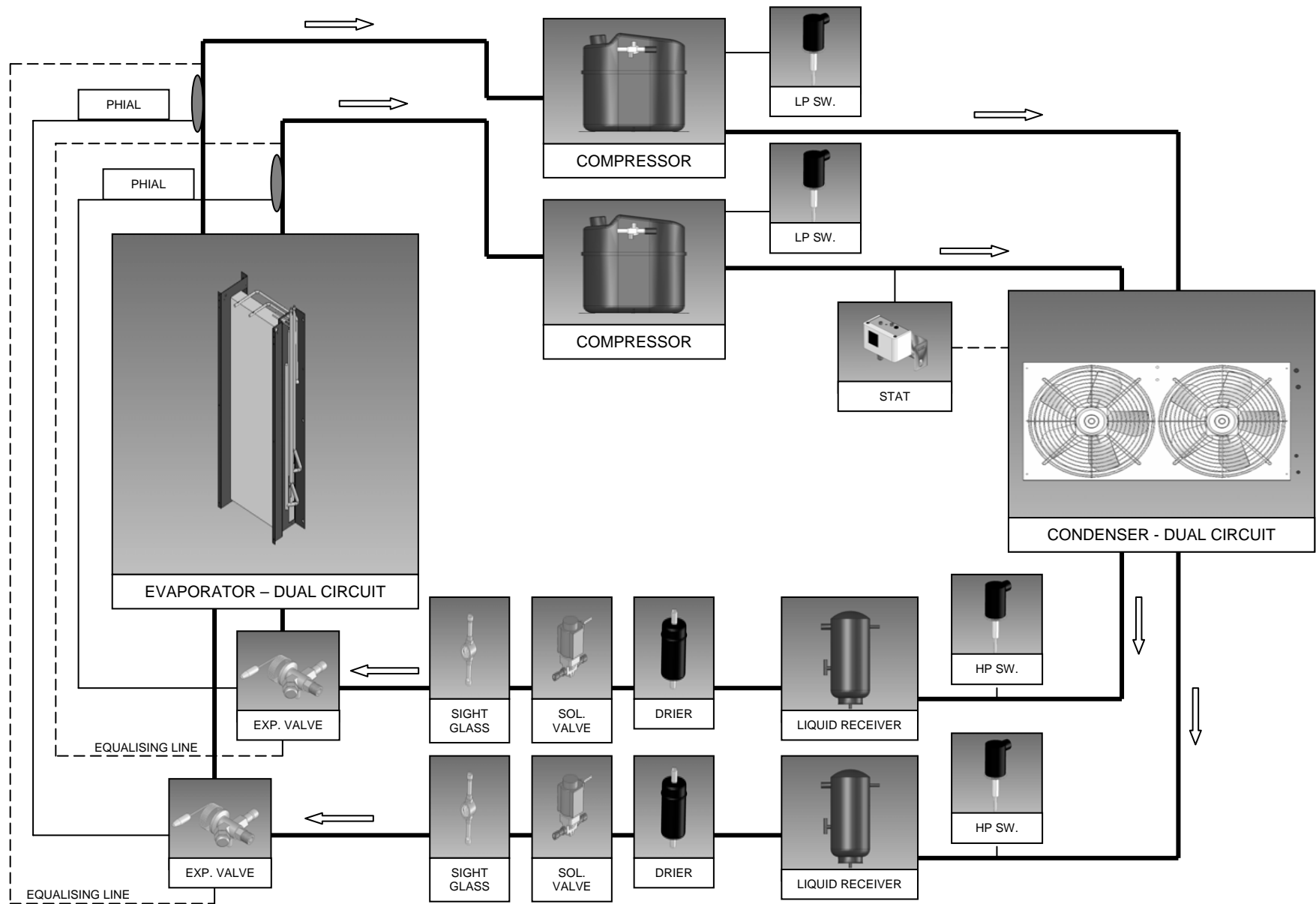
SERVICE PLATE

SYSTEM 1 & SYSTEM 2

PHIALS MUST BE FITTED IN THE **HORIZONTAL POSITION** AND CORK TAPED
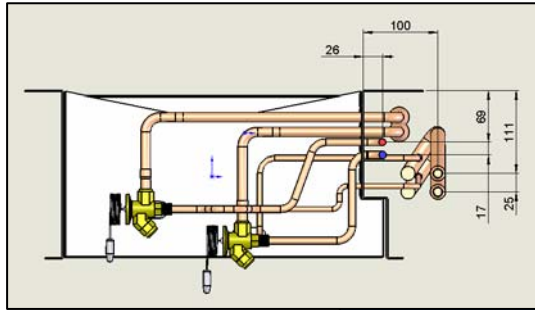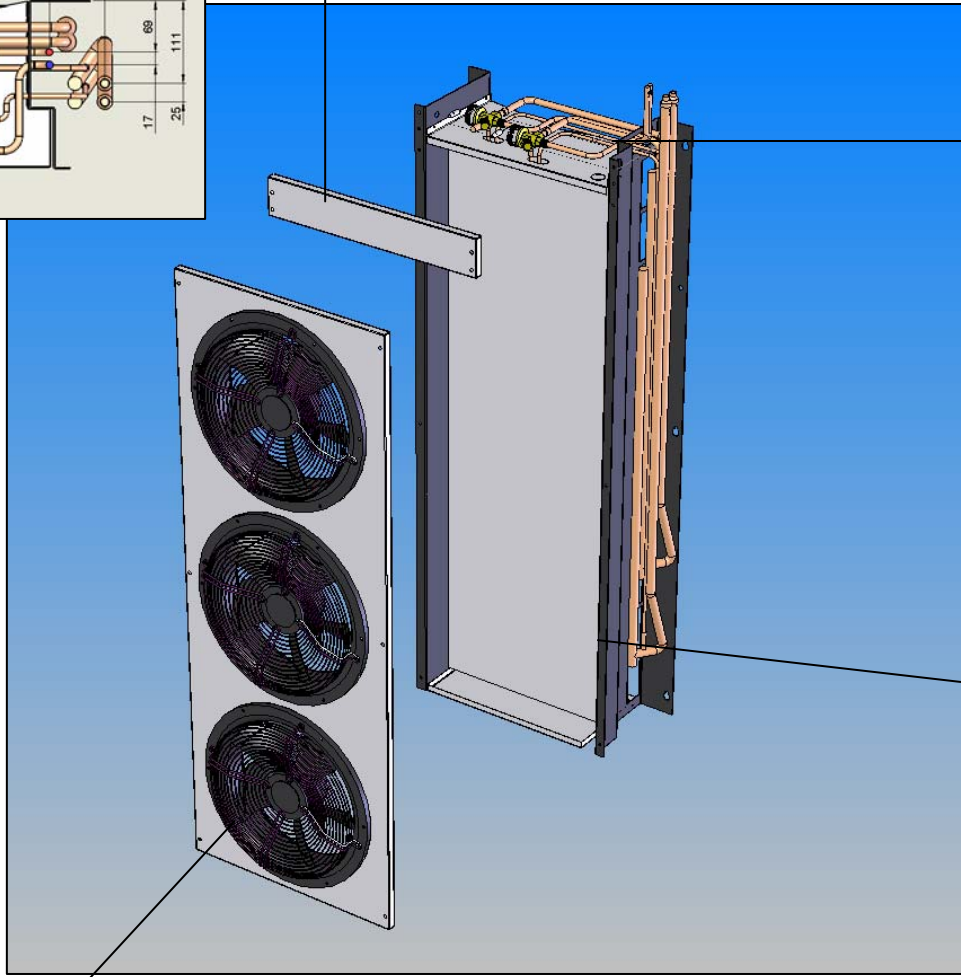
FAN PLATE

EVAPORATOR ASSEMBLY RBC20-60

Schematic Dual Circuit Refrigeration Layout

PHIAL

PHIAL

COMPRESSOR

LP SW.

LP SW.

COMPRESSOR

STAT

CONDENSER - DUAL CIRCUIT

EVAPORATOR – DUAL CIRCUIT

EXP. VALVE

SIGHT GLASS

SOL. VALVE

DRIER

LIQUID RECEIVER

HP SW.

EQUALISING LINE

EXP. VALVE

SIGHT GLASS

SOL. VALVE

DRIER

LIQUID RECEIVER

HP SW.

EQUALISING LINE

COMPRESSOR WIRING RBC20-60

L   BR 1.5mm

N   Bk 1.5mm

E   G/Y 1.5mm

ISOLATOR

BR 1.5mm   1   RD 1.5mm

BL 1.5mm

1 RD 1.5mm

MCB 1 (10A 'D' TYPE)

25 RD

R1

26 RD 1.5mm

1 RD 1.5mm

MCB 2 (10A 'D' TYPE)

31 RD

E G/Y 1.5mm

N1 BL 1.5mm

PAGE 2

26   BL   26   BL   26   BL

EVAP. FAN 1   EVAP. FAN 2   EVAP. FAN 3

27 BR   28 BR   29 BR

4uF CAPACITOR 4uF CAPACITOR 4uF CAPACITOR

WH BK G/Y   WH BK G/Y   WH BK G/Y

N1   N1   N1   N1

PAGE 2

PAGE 2

3. CIRCUIT SHOWN DE-ENERGISED.

4. KLIXON 1 NORMALLY CLOSED TYPE - OPENS 70°C / CLOSES 55°C. FITTED TO VAPORISER TRAY.

ALL CABLES 1mm UNLESS STATED
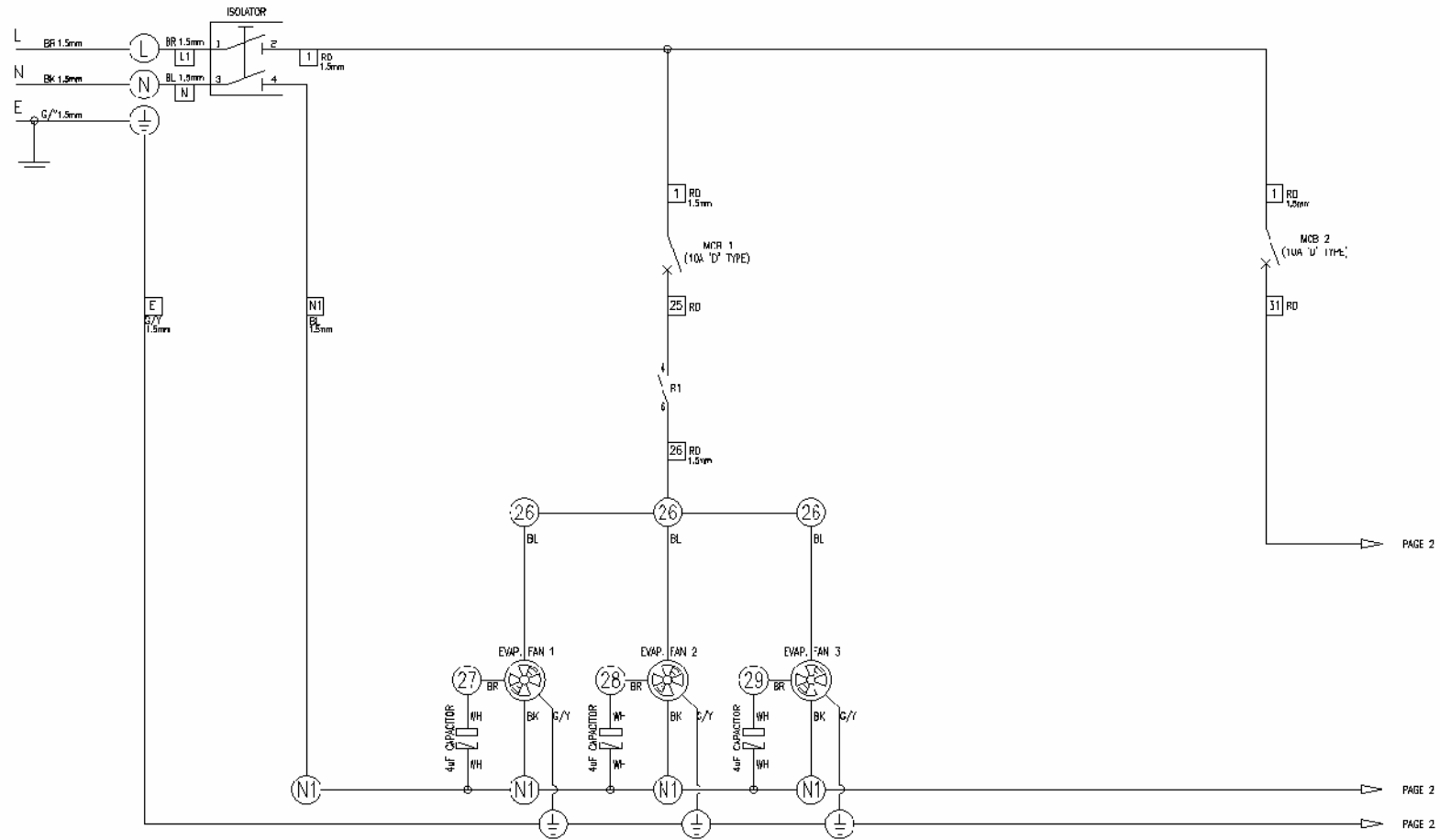
CABLE COLOUR CODE -   BR - BROWN
                       BL - BLUE   BK - BLACK   PK - PINK
                       G/Y - GREEN/YELLOW WH - WHITE   BG - BEIGE
                       RI - RED   GY - GREY   GR - GREEN
                       OF - ORANGE   VT - VIOLET   CL - CLEAR

| 01.05 | | | ndade | 05/01/2007 |
| REV | DESCRIPTION | | BY | DATE |

FOSTER

WIRING DIAGRAM

RBC 20

REMOTE CONFIGURATION

Drawing No :   01-258095-00-01.05

Date :   31/10/2006   Drawn :   ndade

Approved :

Sheet   of

27

Foster European Operations

France
Foster Refrigerator France SA
Tel: (33) 01 34 30 22 22   Fax: (33) 01 30 37 68 74   Email: info@fosterfrance.com

Germany
Foster Refrigerator Germany
Tel: (0781) 96 93 00   Fax: (0781) 96 93 019   Email: info@fosterrefrigerator.de

Foster Refrigerator
Oldmedow Road, King's Lynn,
Norfolk Pe30 4JU
England

Tel: 01553 691122
Fax: 01553 691447
Website: www.fosterrifrigerator.co.uk
Email: sales@foster-uk.com

a Division of ITW (UK) Ltd.

RBC20/SM/0107